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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/281,358	03/30/1999	ROGER PANICACCI	08305/031001	7144

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EXAMINER

TRAN, NHAN T

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 01/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/281,358

Applicant(s)

PANICACCI, ROGER

Examiner

Nhan T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 5-7 is/are allowed.  
6) ☒ Claim(s) 1-3 and 8 is/are rejected.  
7) ☒ Claim(s) 4 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 8/26/2004 with respect to claims 1-8 have been considered but are moot in view of the new ground of rejection.

### *Claim Objections*

2. Claim 4 is objected to because the claim recites the limitation "said plurality of **associated** storage elements" in lines 4-8. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 & 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fossum et al (US 5,880,691) in view of Gowda et al (US 6,115,066).

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Regarding claim 1, Fossum discloses an active pixel sensor (Fig. 5; col. 5, lines 61-64) comprising:

an array of pixels (Fig. 5), arranged in logical units (columns and/or rows), wherein each pixel comprises a photosensor element and in-pixel selector element (since the disclosed image sensor is an active image sensor, a photosensor element and in-pixel selector element are inherent);

a plurality analog-to-digital converters (46), formed on the same substrate as said pixel sensor array, and each associated with N logical units of the pixel sensor array, each of N logical units having including a plurality of pixels (*see Fig. 5 and col. 6, lines 34-46*), and each of the plurality of analog-to-digital converter comprising: a plurality of storage elements (bit cells 110, Fig. 25), and an analog-to-digital portion (ADC 92 itself), said ADC portion for receiving an analog signal from one of said pixel sensors of an associated logical unit when a selector element associated with said one pixel is enabled, and for converting said analog signal to a converted digital value, said ADC portion storing said converted value into one of said plurality of storage elements; wherein N is at least two (i.e., N=32 columns). See Fig. 25; col. 7, lines 10-20 and col. 12, lines 3-67.

Although Fossum does not explicitly disclose “an in-pixel buffer element,” such an in-pixel buffer is notoriously well known in the art as being a part of an active pixel sensor for buffering pixel signal before being read out to the column line as shown by Gowda in Fig. 4; col. 5, lines 1-7.

Therefore, it would have been obvious to one of ordinary skill in the art to implement the active pixel sensor with an in-pixel buffer element in a conventional fashion as taught by Gowda.

Regarding claim 2, the logical units are lines of the array including either columns or rows (see Fossum, Fig. 5).

Regarding claim 3, both Fossum and Gowda also disclose that each analog-to-digital converter is associated with at least two adjacent lines of the array (see Fossum, col. 6, lines 34-46 and col. 7, lines 10-20 or Gowda, col. 4, lines 6-13).

Regarding claim 8, Gowda further discloses that each pixel is a CMOS pixel (see Gowda col. 1, lines 19-22).

***Allowable Subject Matter***

4. Claim 4 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and also to overcome the objection set in section 2 above.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record fails to teach or fairly suggest the claimed limitations in combination with the corresponding independent claim and intervening claims: “a readout controller, controlling readout information from the photosensor elements, by controlling said analog-to-digital converters to *each* convert information from a first line of the array, to store said information from the first line of the array in one of said plurality of associated storage elements, then to read

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out a second line of the array, and store information from said second line of the array in another one of said plurality of associated storage elements, and then to read out the information from all of the plurality of associated storage elements in a desired order.”

5. Claims 5-7 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding independent claim 5, the prior art of record fails to teach or fairly suggest the combination of all limitations required in claim 5 that includes “...receiving, in *each* of a plurality of A/D converter units *each* comprising *a plurality of first storage unit, a plurality of second storage units*, and an analog-to-digital conversion (ADC) portion, a respective plurality of signals from a respective plurality of first logical units, and A/D converting said respective plurality of signals into a respective plurality of converted digital values and storing said respective plurality of converted digital values information *in a respective one of said plurality of first storage units*; receiving, in said plurality of A/D converter units, a respective of signals from a respective plurality of second logical units, adjacent to said first logical units, and A/D converting said respective plurality of signals into a respective plurality of converted digital values and storing said respective plurality of converted digital values *in a respective one of said plurality of second storage units*; and reading out said information from said A/D conversion unit in a different order than an order in which the information was converted.” as illustrated in at least in Figs. 4A, 4B and 10.

Regarding claims 6 & 7, the claims are allowed as being dependent of claim 5.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nhan T. Tran whose telephone number is (703) 605-4246. The examiner can normally be reached on Monday - Thursday, 8:00am - 6:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew B Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

NT.

A handwritten signature in black ink, appearing to read 'Andrew Christensen', with a long horizontal flourish extending to the right.

ANDREW CHRISTENSEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600